

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1-2. (Cancelled)

3. (Previously Presented) The autonegotiation circuit of claim 13 wherein said first media includes 1000BASE-LX media.

4. (Previously Presented) The autonegotiation circuit of claim 13 wherein said first media includes 1000BASE-SX media.

5. (Previously Presented) The autonegotiation circuit of claim 13 wherein said first media includes 1000BASE-X media.

6. (Previously Presented) The autonegotiation circuit of claim 13 wherein said second media includes 1000BASE-T media.

7-12. (Cancelled)

13. (Previously Presented) An autonegotiation circuit for Ethernet networks, comprising:

a first device that communicates with a first media;

a second device that communicates with a second media; and

a Gigabit interface connector (GBIC) module that communicates with said first device over said first media and with said second device over said second media, wherein said GBIC provides autonegotiation between said first and second devices,

wherein said first device includes a first GBIC interface including a transmitter and a receiver, said GBIC module includes a second GBIC interface with a transmitter and a receiver, said GBIC module includes a first copper interface with a transmitter and a receiver, and said second device includes a second copper interface with a transmitter and a receiver;

wherein said transmitter of said first GBIC interface communicates with said receiver of said second GBIC interface and said receiver of said first GBIC interface communicates with said transmitter of said second GBIC interface, said transmitter of said first copper interface communicates with said receiver of said second copper interface and said receiver of said first copper interface communicates with said transmitter of said second copper interface, and said transmitters of said first and second GBIC interfaces transmit a first configuration ordered set; and

wherein after said receiver of said second GBIC interface receives a second configuration ordered set from said transmitter of said first GBIC interface and said GBIC module stores in memory first configuration data of said first device that is contained in said second configuration ordered set, said transmitter of said first copper interface transmits a first fast link pulse (FLP) burst.

14. (Previously Presented) The autonegotiation circuit of claim 13 wherein said first FLP burst contains at least one configuration parameter provided by said first configuration data.

15. (Original) The autonegotiation circuit of claim 14 wherein said first copper interface and said second copper interface complete autonegotiation by exchanging additional data and establishing a link.

16. (Previously Presented) The autonegotiation circuit of claim 15 wherein said transmitter of said second copper interface transmits second configuration data that is stored in said memory of said GBIC module.

17. (Previously Presented) The autonegotiation circuit of claim 16 wherein said transmitter of said second GBIC interface generates a second configuration ordered set that contains at least one configuration parameter provided by said second configuration data.

18. (Previously Presented) The autonegotiation circuit of claim 17 wherein said first and second GBIC interfaces establish a link.

19. (Previously Presented) The autonegotiation circuit of claim 18 wherein when said link between said first and second GBIC interfaces is lost, autonegotiation is initiated between said first and second GBIC interfaces, and wherein when said link

between said first and second copper interfaces is lost, autonegotiation is initiated between said first and second copper interfaces.

20. (Cancelled)

21. (Previously Presented) The autonegotiation circuit of claim 28 wherein said first media includes 1000BASE-LX media.

22. (Previously Presented) The autonegotiation circuit of claim 28 wherein said first media includes 1000BASE-SX media.

23. (Previously Presented) The autonegotiation circuit of claim 28 wherein said first media includes 1000BASE-X media.

24-27. (Cancelled)

28. (Previously Presented) An autonegotiation circuit for Ethernet networks, comprising:

a switch that communicates with a first media;

a device that communicates with a second media that is a different type of media than said first media; and

a Gigabit interface connector (GBIC) module that communicates with said switch over said first media and with said device over said second media, wherein said GBIC module allows autonegotiation between said switch and said device,

wherein said switch includes a first GBIC interface with a transmitter and a receiver, said GBIC module includes a second GBIC interface with a transmitter and a receiver and a first copper interface with a transmitter and a receiver, and said device includes a second copper interface with a transmitter and a receiver,

wherein said transmitter of said first GBIC interface communicates with said receiver of said second GBIC interface and said receiver of said first GBIC interface communicates with said transmitter of said second GBIC interface,

wherein said transmitter of said first copper interface communicates with said receiver of said second copper interface and said receiver of said first copper interface communicates with said transmitter of said second copper interface,

wherein said transmitters of said first and second GBIC interfaces transmit a first configuration ordered set, and

wherein said transmitter of said first copper interface does not transmit a fast link pulse (FLP) burst until said transmitter of said first GBIC interface transmits said first configuration ordered set.

29. (Previously Presented) The autonegotiation circuit of claim 28 wherein after said receiver of said second GBIC interface receives a second configuration ordered set from said transmitter of said first GBIC interface and said GBIC module stores in memory first configuration data of said switch that is contained in said second

configuration ordered set, said transmitter of said first copper interface transmits a first fast link pulse (FLP) burst.

30. (Previously Presented) The autonegotiation circuit of claim 29 wherein said first fast link pulse (FLP) burst generated by said first copper interface contains at least one configuration parameter provided by said first configuration data.

31. (Original) The autonegotiation circuit of claim 30 wherein said first copper interface and said second copper interface complete 1000BASE-T autonegotiation by exchanging additional data and establishing a 1000BASE-T link.

32. (Previously Presented) The autonegotiation circuit of claim 31 wherein said memory of said GBIC module stores second configuration data of said device.

33. (Previously Presented) The autonegotiation circuit of claim 32 wherein said transmitter of said second GBIC interface generates a second configuration ordered set that contains at least one configuration parameter provided by said second configuration data.

34. (Previously Presented) The autonegotiation circuit of claim 33 wherein said first GBIC interface and said second GBIC interface complete 1000BASE-X autonegotiation and establish a 1000BASE-X link.

35-36. (Cancelled)

37. (Previously Presented) The autonegotiation circuit of claim 46 wherein said first media includes 1000BASE-LX media.

38. (Previously Presented) The autonegotiation circuit of claim 46 wherein said first media includes 1000BASE-SX media.

39. (Previously Presented) The autonegotiation circuit of claim 46 wherein said first media includes 1000BASE-X media.

40. (Previously Presented) The autonegotiation circuit of claim 46 wherein said second media includes 1000BASE-T media.

41-45. (Cancelled)

46. (Previously Presented) An autonegotiation circuit for Ethernet networks, comprising:

first means for communicating with a first media;

second means for communicating with a second media; and

network interfacing means for communicating with said first means over said first media and with said second means over said second media and for providing autonegotiation between said first and second means,

wherein said network interfacing means includes a Gigabit interface connector (GBIC) module,

wherein said first means includes a first network interfacing means including a transmitter and a receiver,

wherein said network interfacing means includes:

a second network interface with a transmitter and a receiver; and

a first copper interface with a transmitter and a receiver,

wherein said second means includes a second copper interface with a transmitter and a receiver,

wherein said transmitter of said first network interface communicates with said receiver of said second network interface and said receiver of said first network interface communicates with said transmitter of said second network interface,

wherein said transmitter of said first copper interface communicates with said receiver of said second copper interface and said receiver of said first copper interface communicates with said transmitter of said second copper interface,

wherein said transmitters of said first and second network interfaces transmit a first configuration ordered set, and

wherein after said receiver of said second network interface receives a second configuration ordered set from said transmitter of said first network interface and said network interfacing means stores in memory first configuration data of said first means that is contained in said second configuration ordered set, said transmitter of said first copper interface transmits a first fast link pulse (FLP) burst.

47. (Previously Presented) The autonegotiation circuit of claim 46 wherein said first FLP burst contains at least one configuration parameter provided by said first configuration data.

48. (Original) The autonegotiation circuit of claim 47 wherein said first copper interface and said second copper interface complete autonegotiation by exchanging additional data and establishing a link.

49. (Original) The autonegotiation circuit of claim 48 wherein said transmitter of said second copper interface transmits second configuration data that is stored in said memory of said network interfacing means.

50. (Original) The autonegotiation circuit of claim 49 wherein said transmitter of said second network interface generates a second configuration ordered set that contains at least one configuration parameter provided by said second configuration data.

51. (Original) The autonegotiation circuit of claim 50 wherein said first and second network interfaces establish a link.

52. (Original) The autonegotiation circuit of claim 51 wherein when said link between said first and second network interfaces is lost, autonegotiation is initiated between said first and second network interfaces, and wherein when said link between

said first and second copper interfaces is lost, autonegotiation is initiated between said first and second copper interfaces.

53-54. (Cancelled)

55. (Previously Presented) The method of claim 65 wherein said first media includes 1000BASE-LX media.

56. (Previously Presented) The method of claim 65 wherein said first media includes 1000BASE-SX media.

57. (Previously Presented) The method of claim 65 wherein said first media includes 1000BASE-X media.

58. (Previously Presented) The method of claim 65 wherein said second media includes 1000BASE-T media.

59-64. (Cancelled)

65. (Previously Presented) A method for establishing a link on an Ethernet network, comprising:

coupling a first media to a first device;

coupling a second media to a second device, wherein said second media is a different type of media than said first media;

using a Gigabit interface connector (GBIC) module to communicate with said first device over said first media and with said second device over said second media, wherein said GBIC module allows autonegotiation between said first and second devices;

providing a first GBIC interface including a transmitter and a receiver in said first device;

providing a second GBIC interface with a transmitter and a receiver in said GBIC;

providing a first copper interface with a transmitter and a receiver in said GBIC;

providing a second copper interface with a transmitter and a receiver in said second device;

establishing communications between said transmitter of said first GBIC interface and said receiver of said second NIC interface and between said receiver of said first GBIC interface and said transmitter of said second GBIC interface;

establishing communications between said transmitter of said first copper interface and said receiver of said second copper interface and between said receiver of said first copper interface and said transmitter of said second copper interface;

transmitting a first configuration ordered set using said transmitters of said first and second GBIC interfaces; and

transmitting a first fast link pulse (FLP) burst using said transmitter of said first copper interface after said receiver of said second GBIC interface receives a second configuration ordered set from said transmitter of said first GBIC interface and said GBIC module stores in memory first configuration data of said first device that is contained in said second configuration ordered set.

66. (Original) The method of claim 65 further comprising inserting at least one configuration parameter provided by said first configuration data in said first FLP burst.

67. (Original) The method of claim 66 further comprising completing autonegotiation by exchanging additional data and establishing a link between said first copper interface and said second copper interface.

68. (Currently Amended) The method of claim 67 further comprising transmitting second configuration data that is stored in said memory of said ~~NIC~~ GBIC using said transmitter of said second copper interface.

69. (Currently Amended) The method of claim 68 further comprising generating a second configuration ordered set that contains at least one configuration parameter provided by said second configuration data using said transmitter of said second ~~NIC~~ GBIC interface.

70. (Previously Presented) The method of claim 69 further comprising establishing a link between said first and second GBIC interfaces.

71. (Previously Presented) The method of claim 70 further comprising initiating autonegotiation between said first and second GBIC interfaces when said link between said first and second GBIC interfaces is lost.

72. (Original) The method of claim 71 further comprising initiating autonegotiation between said first and second copper interfaces when said link between said first and second copper interfaces is lost.

73-74. (Cancelled)

75. (Previously Presented) The Ethernet network of claim 85 wherein said first media includes 1000BASE-LX media.

76. (Previously Presented) The Ethernet network of claim 85 wherein said first media includes 1000BASE-SX media.

77. (Previously Presented) The Ethernet network of claim 85 wherein said first media includes 1000BASE-X media.

78. (Previously Presented) The Ethernet network of claim 85 wherein said second media includes 1000BASE-T media.

79-84. (Cancelled)

85. (Previously Presented) An Ethernet network, comprising:
a first device that communicates with a first media;
a second device that communicates with a second media, wherein said first media is a different media than said second media; and

Gigabit interface connector (GBIC) module that communicates with said first device over said first media and with said second device over said second media, wherein said GBIC module provides autonegotiation between said first and second devices,

wherein said first device includes a first GBIC interface including a transmitter and a receiver, said GBIC module includes a second GBIC interface with a transmitter and a receiver, said GBIC module includes a first copper interface with a transmitter and a receiver, and said second device includes a second copper interface with a transmitter and a receiver,

wherein said transmitter of said first GBIC interface communicates with said receiver of said second GBIC interface and said receiver of said first GBIC interface communicates with said transmitter of said second GBIC interface,

wherein said transmitter of said first copper interface communicates with said receiver of said second copper interface and said receiver of said first copper interface communicates with said transmitter of said second copper interface,

wherein said transmitters of said first and second GBIC interfaces transmit a first configuration ordered set, and

wherein after said receiver of said second GBIC interface receives a second configuration ordered set from said transmitter of said first GBIC interface and said GBIC module stores in memory first configuration data of said first device that is contained in said second configuration ordered set, said transmitter of said first copper interface transmits a first fast link pulse (FLP) burst.

86. (Previously Presented) The Ethernet network of claim 85 wherein said first FLP burst contains at least one configuration parameter provided by said first configuration data.

87. (Original) The Ethernet network of claim 86 wherein said first copper interface and said second copper interface complete autonegotiation by exchanging additional data and establishing a link.

88. (Previously Presented) The Ethernet network of claim 87 wherein said transmitter of said second copper interface transmits second configuration data that is stored in said memory of said GBIC module.

89. (Previously Presented) The Ethernet network of claim 88 wherein said transmitter of said second GBIC interface generates a second configuration ordered set that contains at least one configuration parameter provided by said second configuration data.

90. (Previously Presented) The Ethernet network of claim 89 wherein said first and second GBIC interfaces establish a link.

91. (Previously Presented) The Ethernet network of claim 90 wherein when said link between said first and second GBIC interfaces is lost, autonegotiation is initiated between said first and second GBIC interfaces, and wherein when said link between said first and second copper interfaces is lost, autonegotiation is initiated between said first and second copper interfaces.

92-93. (Cancelled)

94. (Previously Presented) The software method of claim 104 wherein said first media includes 1000BASE-LX media.

95. (Previously Presented) The software method of claim 104 wherein said first media includes 1000BASE-SX media.

96. (Previously Presented) The software method of claim 104 wherein said first media includes 1000BASE-X media.

97. (Previously Presented) The software method of claim 104 wherein said second media includes 1000BASE-T media.

98-103. (Cancelled)

104. (Previously Presented) A software method for establishing a link on an Ethernet network, comprising:

coupling a first media to a first device;

coupling a second media to a second device, wherein said second media is a different type of media than said first media;

using a Gigabit interface connector (GBIC) module to communicate with said first device over said first media and with said second device over said second media, wherein said GBIC module allows autonegotiation between said first and second devices;

providing a first GBIC interface including a transmitter and a receiver in said first device;

providing a second GBIC interface with a transmitter and a receiver in said GBIC;

providing a first copper interface with a transmitter and a receiver in said GBIC;

providing a second copper interface with a transmitter and a receiver in said second device;

establishing communications between said transmitter of said first GBIC interface and said receiver of said second NIC interface and between said receiver of said first GBIC interface and said transmitter of said second GBIC interface;

establishing communications between said transmitter of said first copper interface and said receiver of said second copper interface and between said receiver of said first copper interface and said transmitter of said second copper interface;

transmitting a first configuration ordered set using said transmitters of said first and second GBIC interfaces; and

transmitting a first fast link pulse (FLP) burst using said transmitter of said first copper interface after said receiver of said second GBIC interface receives a second configuration ordered set from said transmitter of said first GBIC interface and said GBIC module stores in memory first configuration data of said first device that is contained in said second configuration ordered set.

105. (Previously Presented) The software method of claim 104 further comprising inserting at least one configuration parameter provided by said first configuration data in said first FLP burst.

106. (Original) The software method of claim 105 further comprising completing autonegotiation by exchanging additional data and establishing a link between said first copper interface and said second copper interface.

107. (Previously Presented) The software method of claim 106 further comprising transmitting second configuration data that is stored in said memory of said GBIC using said transmitter of said second copper interface

108. (Previously Presented) The software method of claim 107 further comprising generating a second configuration ordered set that contains at least one configuration parameter provided by said second configuration data using said transmitter of said second GBIC interface.

109. (Previously Presented) The software method of claim 108 further comprising establishing a link between said first and second GBIC interfaces.

110. (Previously Presented) The software method of claim 109 further comprising initiating autonegotiation between said first and second GBIC interfaces when said link between said first and second GBIC interfaces is lost.

111. (Original) The software method of claim 110 further comprising initiating autonegotiation between said first and second copper interfaces when said link between said first and second copper interfaces is lost.

112-113. (Cancelled)

114. (Previously Presented) The Ethernet network of claim 124 wherein said first media includes 1000BASE-LX media.

115. (Previously Presented) The Ethernet network of claim 124 wherein said first media includes 1000BASE-SX media.

116. (Previously Presented) The Ethernet network of claim 124 wherein said first media includes 1000BASE-X media.

117. (Previously Presented) The Ethernet network of claim 124 wherein said second media includes 1000BASE-T media.

118-123. (Cancelled)

124. (Previously Presented) An Ethernet network, comprising:
first means for communicating with a first media;
second means for communicating with a second media, wherein said first media is a different media than said second media; and
network interface means for communicating with said first means over said first media and with said second means over said second media and for providing autonegotiation between said first and second means,

wherein said network interface means includes a Gigabit interface connector (GBIC) module, said first means includes a first interface including a transmitter and a receiver, said network interface means includes a second interface with a transmitter and a receiver, said network interface means includes a first copper interface with a transmitter and a receiver, and said second means includes a second copper interface with a transmitter and a receiver,

wherein said transmitter of said first interface communicates with said receiver of said second interface and said receiver of said first interface communicates with said transmitter of said second interface,

wherein said transmitter of said first copper interface communicates with said receiver of said second copper interface and said receiver of said first copper interface communicates with said transmitter of said second copper interface,

wherein said transmitters of said first and second interfaces transmit a first configuration ordered set, and

wherein after said receiver of said second interface receives a second configuration ordered set from said transmitter of said first interface and said network interface means stores in memory first configuration data of said first means that is contained in said second configuration ordered set, said transmitter of said first copper interface transmits a first fast link pulse (FLP) burst.

125. (Original) The Ethernet network of claim 124 wherein said first FLP burst contains at least one configuration parameter provided by said first configuration data.

126. (Original) The Ethernet network of claim 125 wherein said first copper interface and said second copper interface complete autonegotiation by exchanging additional data and establishing a link.

127. (Original) The Ethernet network of claim 126 wherein said transmitter of said second copper interface transmits second configuration data that is stored in said memory of said network interface means.

128. (Original) The Ethernet network of claim 127 wherein said transmitter of said second interface generates a second configuration ordered set that contains at least one configuration parameter provided by said second configuration data.

129. (Original) The Ethernet network of claim 128 wherein said first and second interfaces establish a link.

130. (Original) The Ethernet network of claim 129 wherein when said link between said first and second interfaces is lost, autonegotiation is initiated between said first and second interfaces, and wherein when said link between said first and second copper interfaces is lost, autonegotiation is initiated between said first and second copper interfaces.

131-132. (Cancelled)

133. (Previously Presented) The method of claim 143 wherein said first media includes 1000BASE-LX media.

134. (Previously Presented) The method of claim 143 wherein said first media includes 1000BASE-SX media.

135. (Previously Presented) The method of claim 143 wherein said first media includes 1000BASE-X media.

136. (Previously Presented) The method of claim 143 wherein said second media includes 1000BASE-T media.

137-142. (Cancelled)

143. (Previously Presented) A method for establishing a link on an Ethernet network, comprising:

coupling a first media to a switch;

coupling a second media to a device, wherein said second media is a different type of media than said first media;

using a Gigabit interface connector (GBIC) module to communicate with said switch over said first media and with said device over said second media, wherein said GBIC module allows autonegotiation between said switch and said device;

providing a first GBIC interface including a transmitter and a receiver in said switch;

providing a second GBIC interface with a transmitter and a receiver in said GBIC module;

providing a first copper interface with a transmitter and a receiver in said GBIC module;

providing a second copper interface with a transmitter and a receiver in said device;

establishing communications between said transmitter of said first GBIC interface and said receiver of said second GBIC interface and between said receiver of said first GBIC interface and said transmitter of said second GBIC interface;

establishing communications between said transmitter of said first copper interface and said receiver of said second copper interface and between said receiver of said first copper interface and said transmitter of said second copper interface;

transmitting a first configuration ordered set using said transmitters of said first and second GBIC interfaces; and

transmitting a first fast link pulse (FLP) burst using said transmitter of said first copper interface after said receiver of said second GBIC interface receives a second configuration ordered set from said transmitter of said first GBIC interface and said GBIC module stores in memory first configuration data of said switch that is contained in said second configuration ordered set.

144. (Original) The method of claim 143 further comprising inserting at least one configuration parameter provided by said first configuration data in said first FLP burst.

145. (Original) The method of claim 144 further comprising completing autonegotiation by exchanging additional data and establishing a link between said first copper interface and said second copper interface.

146. (Previously Presented) The method of claim 145 further comprising transmitting second configuration data that is stored in said memory of said GBIC module using said transmitter of said second copper interface.

147. (Previously Presented) The method of claim 146 further comprising generating a second configuration ordered set that contains at least one configuration parameter provided by said second configuration data using said transmitter of said second GBIC interface.

148. (Previously Presented) The method of claim 147 further comprising establishing a link between said first and second GBIC interfaces.

149. (Previously Presented) The method of claim 148 further comprising initiating autonegotiation between said first and second GBIC interfaces when said link between said first and second GBIC interfaces is lost.

150. (Original) The method of claim 149 further comprising initiating autonegotiation between said first and second copper interfaces when said link between said first and second copper interfaces is lost.

151-152. (Cancelled)

153. (Previously Presented) The software method of claim 163 wherein said first media includes 1000BASE-LX media.

154. (Previously Presented) The software method of claim 163 wherein said first media includes 1000BASE-SX media.

155. (Previously Presented) The software method of claim 163 wherein said first media includes 1000BASE-X media.

156. (Previously Presented) The software method of claim 163 wherein said second media includes 1000BASE-T media.

157-162. (Cancelled)

163. (Previously Presented) A software method for establishing a link on an Ethernet network, comprising:

coupling a first media to a switch;

coupling a second media to a device, wherein said second media is a different type of media than said first media;

using a Gigabit interface connector (GBIC) module to communicate with said switch over said first media and with said device over said second media, wherein said GBIC module allows autonegotiation between said switch and said device;

providing a first GBIC interface including a transmitter and a receiver in said switch;

providing a second GBIC interface with a transmitter and a receiver in said GBIC module;

providing a first copper interface with a transmitter and a receiver in said GBIC module;

providing a second copper interface with a transmitter and a receiver in said device;

establishing communications between said transmitter of said first GBIC interface and said receiver of said second GBIC interface and between said receiver of said first GBIC interface and said transmitter of said second GBIC interface;

establishing communications between said transmitter of said first copper interface and said receiver of said second copper interface and between said receiver of said first copper interface and said transmitter of said second copper interface;

transmitting a first configuration ordered set using said transmitters of said first and second GBIC interfaces; and

transmitting a first fast link pulse (FLP) burst using said transmitter of said first copper interface after said receiver of said second GBIC interface receives a second configuration ordered set from said transmitter of said first GBIC interface and said GBIC module stores in memory first configuration data of said switch that is contained in said second configuration ordered set.

164. (Previously Presented) The software method of claim 163 further comprising inserting at least one configuration parameter provided by said first configuration data in said first FLP burst.

165. (Original) The software method of claim 164 further comprising completing autonegotiation by exchanging additional data and establishing a link between said first copper interface and said second copper interface.

166. (Previously Presented) The software method of claim 165 further comprising transmitting second configuration data that is stored in said memory of said GBIC using said transmitter of said second copper interface.

167. (Previously Presented) The software method of claim 166 further comprising generating a second configuration ordered set that contains at least one configuration parameter provided by said second configuration data using said transmitter of said second GBIC interface.

168. (Previously Presented) The software method of claim 167 further comprising establishing a link between said first and second GBIC interfaces.

169. (Previously Presented) The software method of claim 168 further comprising initiating autonegotiation between said first and second GBIC interfaces when said link between said first and second GBIC interfaces is lost.

170. (Original) The software method of claim 169 further comprising initiating autonegotiation between said first and second copper interfaces when said link between said first and second copper interfaces is lost.

171. (Cancelled)